ENVIRONMENTAL CHEMISTS

Date of Report: August 8, 1996 Date Received: August 1, 1996

Project: 4700 Colorado Drum Solid ID Date Samples Extracted: August 1, 1996 Date Extracts Analyzed: August 2, 1996

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLE FOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Samples Processed Using Method 3050 Results Reported as ug/g (ppm)

Sample ID	<u>M54083</u>	Method Blank
Analyte:		
Arsenic	8	<5
Barium	20	<1
Cadmium	<1	<1
Chromium	11	<1
Lead	85	<2
Selenium	<5	<5
Silver	<1	<1

ENVIRONMENTAL CHEMISTS

Date of Report: August 8, 1996 Date Received: August 1, 1996

Project: 4700 Colorado Drum Solid ID

QUALITY ASSURANCE RESULTSFOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Laboratory Code: 71153(Duplicate)

				Relative	
Re	porting	Sample	Duplicate	Percent	Acceptance
Analyte:	Units	Result	Result	Difference	Criteria
Arsenic ug/	g (ppm)	8	10	22a	0-20
Barium ug/	g (ppm)	74	77	4	0-20
Cadmium ug/	g (ppm)	32	32	0	0-20
Chromium ug/	g (ppm)	150	150	0	0-20
Lead ug/	g (ppm)	520	520	0	0-20
Selenium ug/	g (ppm)	<5	<5	nm	0-20
	g (ppm)	4	4	0	0-20

Laboratory Code: 71153 (Matrix Spike)

	Reporting	Spike	Sample	% Rec	overy	Acceptance	Relative Percent
Analyte:	Units	Level	Result	MS	MSD	Criteria	Difference
	harithitai	100		00		FO 1FO	
Arsenic	ug/g (ppm)		8	98	95	50-150	3
Barium	ug/g (ppm)		74	aı	aı	50-150	ai
Cadmium	ug/g (ppm)		32	98	96	50-150	2
Chromium	ug/g (ppm)		150	ai	ai	50-150	ai
Lead	ug/g (ppm)	100	520	ai	ai	50-150	ai
Selenium	ug/g (ppm)	100	<5	99	99	50-150	0
Silver	ug/g (ppm)	20	4	77	77	50-150	0

Laboratory Code: Spike Blank

	Reporting	Spike	% I	Recovery	Acceptance	Relative Percent
Analyte:	Units	Level	MS	MSD	Criteria	Difference
Arsenic	ug/g (ppm)	100	99	99	80-120	0
Barium	ug/g (ppm)	50	111	107	80-120	4
Cadmium	ug/g (ppm)	50	112	112	80-120	0
Chromium	ug/g (ppm)	50	108	108	80-120	0
Lead	ug/g (ppm)	100	112	113	80-120	1
Selenium	ug/g (ppm)	100	107	106	80-120	1
Silver	ug/g (ppm)	20	95	93	80-120	2

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

a - The analyte was detected at a level less than five times the detection limit. The RPD results may not provide reliable information on the variability of the analysis.

ai - The amount spiked was insufficient to give meaningful recovery data.

ENVIRONMENTAL CHEMISTS

Date of Report: August 8, 1996 Date Received: August 1, 1996

Project: 4700 Colorado Drum Solid ID Date Samples Extracted: August 2, 1996 Date Extracts Analyzed: August 2, 1996

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLE FOR TOTAL MERCURY BY COLD VAPOR AA Samples Processed Using Method 7471A Results Reported as μg/g (ppm)

Sample ID			Mercury
M54083			0.04
Method Blank			< 0.02

FRIEDMAN & BRUYA, INC. ENVIRONMENTAL CHEMISTS

Date of Report: August 8, 1996 Date Received: August 1, 1996

Project: 4700 Colorado Drum Solid ID

QUALITY ASSURANCE RESULTS FOR MERCURY BY COLD VAPOR AA (METHOD 7471A)

Laboratory Code: 71175 (Duplicate)

	Reporting	Sample		Duplicate	Relative Percent	Acceptance
Analyte:	Units	Result	424	Result	Difference	Criteria
Mercury	μg/g (ppm)	0.04		0.04	0	0-20

Laboratory Code: 71175 (Matrix Spike)

	Reporting	Spike	Sample	% Recovery	Acceptance	Relative Percent
Analyte:	Units	Level	Result	MS MSD	Criteria	Difference
Mercury	μg/g (ppm)	0.3	0.04	103 107	50-150	4

Laboratory Code: Spike Blank

	Reporting	Spike	% Re	covery	Acceptano	Relative e Percent
Analyte:	Units	Level	MS	MSD	Criteria	Difference
Mercury	μg/g (ppm))	0.3	110	107	80-120	3

FRIEDMAN & BRUYA, INC. - 3012. 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282

SAMPLE CHAIN OF CUSTODY

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D Beth M. Albertson, M.S. Bradley T. Benson Kelley D. Wilt 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044

August 8, 1996

Gerry Thompson, Project Manager Alaskan Copper Works 628 South Hanford Seattle, WA 98134

Dear Mr. Thompson:

Enclosed are the results from the testing of material submitted on August 1, 1996 from your 4700 Colorado Drum Solid ID project.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Kurt Johnson Chemist

keh Enclosures ACU0808R.DOC

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August 8, 1996

INVOICE # 96ACU0808-1 DUPLICATE COPY

Accounts Payable Alaskan Copper Works 628 South Hanford Seattle, WA 98134

RE: Project 4700 Colorado Drum Solid ID: Results of testing requested by Gerry Thompson, Project Manager for material submitted on August 1, 1996.

1 soil sample analyzed for	or Total Metals		
by Method 6010 @ \$105	per sample		\$ 105.00
Amount Due		t i piskulik ji semelik ji li pi sas	\$ 105.00